

1. An apparatus for modeling and analyzing a plurality of computing workloads, comprising:
 - a data collection module configured to gather performance data associated with the operation of a computer system;
 - a modeling module configured to execute at least one model that uses the gathered performance data;
 - a data analysis module configured to present analysis data compiled from the modeling module; and
 - a framework configured to manage the data collection module, the modeling module, and the data analysis module in response to a predefined data and model flow.
2. The apparatus of Claim 1, wherein the framework is configured to selectively operate a predefined data collection module or a user-defined data collection module in response to the predefined data and model flow.
3. The apparatus of Claim 1, wherein the framework is configured to selectively operate a predefined model or a user-defined model in response to the predefined data and model flow.
4. The apparatus of Claim 1, wherein the framework is configured to selectively operate a predefined data analysis module or a user-defined data analysis module in response to the predefined data and model flow.

5. The apparatus of Claim 1, wherein the framework is integrated within a predefined user interface.

6. The apparatus of Claim 1, wherein the framework is integrated within a third-party application.

7. The apparatus of Claim 1, wherein the modeling module is further configured to execute a plurality of models such that output data from a first model serves as input data for a second model in a hierarchy of models.

8. The apparatus of Claim 1, wherein the modeling module is further configured to execute a plurality of models in parallel.

9. The apparatus of Claim 1, wherein the framework is configured to implement the predefined data and model flow at least in part by defining a workload software object from a persistent data structure, the workload software object comprising parameters for the data collection module, modeling module, and data analysis module.

10. The apparatus of Claim 1, further comprising an editor configured to allow a user to define and store the predefined data and model flow.

11. The apparatus of Claim 1, wherein the at least one model is selected from the group of models consisting of a workload prediction model, a performance analysis model, an optimization model, and a user-defined model.

12. An editor for defining, revising, and storing a data and model flow for modeling and analyzing a plurality of computing workloads, comprising:
- an identification module for gathering an identifier for a data and model flow;
 - a measurement module for designating a data collection module configured to gather performance data associated with the operation of a computer system;
 - a model module for designating at least one model that uses the gathered performance data;
 - a metric map for defining model variables required to analyze analysis data compiled from the at least one model;
 - a plot module for designating a data analysis module configured to present analysis data compiled from the at least one model.
13. The editor of Claim 12, further comprising a storage module configured to store and retrieve the data and model flow from a persistent data structure.
14. The editor of Claim 13, wherein the persistent data structure comprises an eXtensible Markup Language (XML) file.
15. The editor of Claim 13, wherein the persistent data structure comprises a database.

16. A system for modeling and analyzing computing operations for a computer system, comprising:

a computer system for which computer workloads are to be monitored and analyzed;

a data collection module in communication with the computer system and configured to gather performance data associated with the operation of the computer system;

a run-time manager configured to periodically poll the data collection module and in response to the data collection module providing the gathered performance data, execute one or more models in a workload module associated with the gathered performance data;

a data analysis module configured to present analysis data compiled from the workload module in response to an event.

17. The system of Claim 16, further comprising a user interface configured to execute one or more workload modules within the run-time manager in response to a user request, each workload modules defining a data and model flow specifically designed for the computer system, the data and model flow defined within a persistent data structure.

18. The system of Claim 16, wherein the event comprises analysis data that fails to satisfy a threshold value.

19. The system of Claim 16, wherein the event comprises a user request for analysis data, the data analysis module presenting the analysis data to a user by way of a user-definable plotting module.

20. The system of Claim 16, further comprising an event handler that executes a predefined action in response to the event.

21. An application programming interface (API) for real-time modeling and analyzing of computing workloads, comprising:

a measurement software class configured to gather performance data associated with the operation of a computer system;

a workload software class that defines a data and model flow associated with the computer system, the workload software class comprising one or more model software classes that utilize the gathered performance data to model attributes of the computer system; and

a run-time manager software class configured to periodically poll for measurement objects instantiated from the measurement software class and execute one or more model objects instantiated from the one or more model software classes in response to the data and model flow defined by one or more workload objects.

22. The API of Claim 21, further comprising a real-time interface module configured to start and stop execution of one or more workload objects.

23. The API of Claim 21, wherein the interface is further configured to present analysis data compiled by a plot object instantiated from a plot class, the analysis data associated with a specific workload object identified by a user.

24. A method for modeling and analyzing a plurality of computing workloads, comprising:

gathering performance data associated with the operation of a computer system;

executing at least one model that uses the gathered performance data;

presenting analysis data compiled from the at least one model; and

providing a framework configured to manage the gathering of performance data, the execution of the at least one model, and the presentation of the analysis data in response to a predefined data and model flow.

25. The method of Claim 24, wherein the framework is executed from within a third-party application.

26. An article of manufacture comprising a program storage medium readable by a processor and embodying one or more instructions executable by a processor to perform a method for modeling and analyzing a plurality of computing workloads, the method comprising:

gathering performance data associated with the operation of a computer system;

executing at least one model that uses the gathered performance data;

presenting analysis data compiled from the at least one model; and

providing a framework configured to manage the gathering of performance data, the execution of the at least one model, and the presentation of the analysis data in response to a predefined data and model flow.

27. An apparatus for modeling and analyzing a plurality of computing workloads, comprising:

- means for gathering performance data associated with the operation of a computer system;
- means for executing at least one model that uses the gathered performance data;
- means for presenting analysis data compiled from the at least one model;
- and
- means for providing a framework configured to manage the gathering of performance data, the execution of the at least one model, and the presentation of the analysis data in response to a predefined data and model flow.

28. A method for modeling and analyzing a plurality of computing workloads, said method comprising:

- specifying a data and model flow for monitoring a computer system;
- invoking a modeling and analysis utility, wherein the data and model flow defines performance data that is collected and models that are executed periodically using the performance data to compile analysis data representative of results from one or more of the models; and
- receiving a real-time graphical representation of the analysis data from the modeling and analysis utility, in response to an event.

29. The method of Claim 28, wherein the event comprises analysis data that fails to satisfy a threshold value.

30. The method of Claim 28, wherein the event comprises a user request, the modeling and analysis utility presenting the graphical representation of the analysis data to a user by way of a user-defined plotting module.